REMARKS

Claims 1-15 and 24-25 are pending in the present application. Claims 16-23 are withdrawn from consideration.

Claims 1, 6, 10-13 and 24-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 5,374,413) in view of van Slooten (U.S. Patent No. 4,992,245).

Claims 2-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 5,374,413) in view of van Slooten (U.S. Patent No. 4,992,245) in view of Stroder (WO Application No. 2004/056452).

Claims 7-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 5,374,413) in view of van Slooten (U.S. Patent No. 4,992,245) in view of Hardwick et al. (U.S. Patent No. 4,490,287).

Claims 1-15 and 24-25 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/540,433.

Reconsideration of the application based on the following remarks is respectfully requested.

Rejections of Claims 1-13 and 24-25 under 35 U.S.C. § 103(a)

Claims 1, 6, 10-13 and 24-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 5,374,413) in view of van Slooten (U.S. Patent No. 4,992,245). Claims 2-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 5,374,413) in view of van Slooten (U.S. Patent No. 4,992,245) in view of Stroder (WO Application No. 2004/056452). Claims 7-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 5,374,413) in view of van Slooten (U.S. Patent No. 4,992,245) in view of Hardwick et al. (U.S. Patent No. 4,490,287).

Kim describes a method for the deposition of high-purity silicon on silicon particles from silicon source gasses. Kim describes a fluidized bed reactor where silicon particles in a heating zone 10 are heated by irradiation of microwaves introduced through waveguides 24a and 24b and then through the reactor walls in front of the waveguides. See Kim, the Abstract, column 9, lines 52-57, column 10, lines 10-13 and Figure 3.

Van Slooten describes a heated fluidized bed reactor. Silane containing gas in conduit 21 enters the bottom of the reactor vessel 12 below the portion 25 of the gas distributor plate that is positioned below the fluidized bed reactor zone 23. Hydrogen gas enters the bottom of the fluidized bed reactor vessel via line 20 below the portion 26 of the gas distributor plate that is directly below the peripheral heating zone annulus 27. See van Slooten, column 1, lines 9-10, column 8, lines 50-65 and Figure 1.

Stroder describes a method for removing gaseous pollutants from exhaust gases using an annular fluidized bed reactor. See Stroder, page 1, fifth paragraph, line 1, to page 2, end of first paragraph.

Hardwick describes an apparatus for the treatment of a substance contained in a solution of a slurry. The apparatus introduces microwave radiation from a microwave source to the oven by means of wave guide 5 and is distributed with the aid of oven mode stirrer 6. See Hardwick, the Abstract, column 7, lines 30-33 and Figure 1.

Independent claim 1 of the present application recites a method for thermal treating granular solids in a fluidized-bed reactor comprising:

> "at least one gas supply tube being at least partly surrounded by a stationary annular fluidized bed" and
>
> supplying "microwave radiation to the mixing chamber through the at least one gas supply tube."

It is respectfully submitted that none of Kim, van Slooten, Stroder or Hardwick teach or suggest supplying microwave radiation to the mixing chamber through at least one gas supply tube at least partly surrounded by a stationary annular fluidized bed in a fluidized-bed reactor, as recited in claim 1. In contrast, Kim describes a fluidized bed reactor where microwaves are introduced through waveguides 24a and 24b and then through the reactor walls in front of the waveguides. See

Kim, the Abstract, column 9, lines 52-57, column 10, lines 10-13, and Figure 3. As discussed in the present specification, open microwave waveguides and microwave-transparent windows are disadvantageous. See Specification, page 1, line 14, to page 2, line 5. Kim nowhere teaches or suggests supplying microwave radiation to the reaction zone 11 through either of gas supply tube 8 or 9, or any gas supply tube, as required by claim 1. Also, as the Office itself points out, Kim does not disclose a stationary annular fluidized bed, as recited. See Office Action of February 11, 2009, page 4, line 10-11. None of van Slooten, Stroder or Hardwick cure this defect. Van Slooten, in contrast, merely describes a fluidized bed reactor where silane-containing gas and hydrogen gas are, in isolation of each other, passed into vessel 12 through a perforated gas distributor plate 25. See van Slooten, column 8, lines 50-65 and Figure 1. Van Slooten therefore neither teaches nor suggests either the at least one gas supply tube being at least partly surrounded by a stationary annular fluidized bed or supplying microwave radiation to the mixing chamber through the at least one gas supply tube, as recited in claim 1. With respect to Stroder, it is respectfully submitted that that reference is not prior art to the present application because its effective date of November 14, 2003 is after the priority date, December 23, 2002, of the present application. A translation of DE 102 60 745.1, to which the present application claims priority, including a statement that the translation is accurate, is submitted herewith for the Examiner's consideration to perfect the priority date of December 23, 2002. See Verified Translation of DE 102 60 745.1 submitted herewith. Regarding Hardwick, that reference in contrast merely describes introducing a microwave source into an oven 4 by means of a wave guide 5 with distribution occurring with the aid of an oven mode stirrer 6. See Hardwick, the Abstract, column 7, lines 30-33 and Figure 1. Hardwick therefore also fails to teach or suggest either the at least one gas supply tube being at least partly surrounded by a stationary annular fluidized bed or supplying microwave radiation to the mixing chamber through the at least one gas supply tube, as recited in claim 1.

Because each of Kim, van Slooten and Hardwick are missing at least the above-recited features of supplying microwave radiation to the mixing chamber through the at least one gas supply tube at least partly surrounded by a stationary annular fluidized bed as recited in claim 1, and because Stroder is not prior art to the present application, it is respectfully submitted that any

combination of Kim, van Slooten, Stroder and Hardwick, to the extent proper, could not render claim 1 or any of its dependent claims obvious.

For the above reasons, reconsideration and withdrawal of the rejection to claims 1-13 and 24-25 under 35 U.S.C. § 103(a) based on Kim, van Slooten, Stroder and Hardwick is respectfully requested.

Nonstatutory Obviousness-Type Double Patenting Rejection

Claims 1-15 and 24-25 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/540,433.

Independent claim 1 of copending Application No. 10/540,433, from which its claims 2-28 depend, recites "[a] method for thermal treating granular solids in a fluidized bed which is located in a fluidized-bed reactor comprising feeding microwave radiation into the fluidized-bed reactor through at least one wave guide inclining by an irradiation angle of 10° to 50° with respect to a principal axis of the fluidized-bed reactor." See Claim 1 of copending Application No. 10/540,433 as amended pursuant to the Preliminary Amendment filed on June 22, 2005.

Independent claim 1 of the present application recites a method for thermal treating granular solids in a fluidized-bed reactor including "supplying the microwave radiation to the mixing chamber through the at least one gas supply tube."

It is respectfully submitted that the invention defined in claim 1 of the present application is not anticipated by or an obvious variation of the invention defined in claim 1 of copending Application No. 10/540,433. Copending Application No. 10/540,433 does not teach or suggest supplying microwave radiation to the mixing chamber through at least one gas supply tube, as recited in claim 1. In contrast, claim 1 of copending Application No. 10/540,433 recites feeding microwave radiation into the reactor through at least one waveguide. As indicated above relative to the rejections under §103(a), introducing microwave radiation via a waveguide is not the same as, and does not suggest, supplying microwave radiation via a gas supply tube. Claim 1 of copending Application No. 10/540,433 therefore is patentably distinct from claim 1 of the present application.

Because copending Application No. 10/540,433 is missing at least the feature of supplying microwave radiation to the mixing chamber through the at least one gas supply tube, as recited in claim 1 of the present application, it is respectfully submitted that claim 1 and dependent claims 2-15 and 24-25 of the present application are not anticipated by or an obvious variation of the invention defined in claim 1 and dependent claims 1-18 of copending Application No. 10/540,433.

For the above reasons, reconsideration and withdrawal of the rejection to claims 1-15 and 24-25 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No. 10/540,433 is respectfully requested.

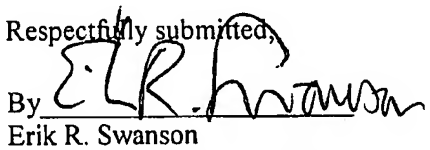
CONCLUSION

In view of the above arguments, applicants believe the pending application is in condition for allowance.

The Commissioner is hereby authorized to charge any unpaid fees deemed required in connection with this submission, including any additional filing or application processing fees required under 37 C.F.R. §1.16 or 1.17, or to credit any overpayment, to Deposit Account No. 04-0100.

Dated: July 10, 2009

Respectfully submitted,

By 

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